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From: CN=Richard Mylott/OU=R8/O=USEPA/C=US
Sent: Thur 7/12/2012 6:09:44 PM
Subject: Fw: HF: a statistical view of fracture length

very interesting

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----- Forwarded by Richard Mylott/R8/USEPA/US on 07/12/2012 12:07 PM -----

From: Dan Jackson/R8/USEPA/US
To: Mylott.Richard@epamail.epa.gov
Date: 07/12/2012 08:17 AM
Subject: Fw: HF: a statistical view of fracture length

Hey Rich - I know your plate overflows these days, but since this mentions Pavillion, I thought you might be interested...

forwarded by Dan Jackson/R8/USEPA/US on 07/12/2012 08:16 AM -----

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Date: 07/12/2012 08:01 AM
Subject: HF: a statistical view of fracture length

FYI: interesting article from American Association of Petroleum Geologists (AAPG) Explorer magazine on data-based evaluation fracture height from hydraulic fracturing operations.

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http://www.aapg.org/explorer/2012/07jul/hydrofracturing_0712.cfm

No proven cases of aquifer fouling
Hydro Fracturing Caution Suggested
By KEN MILAM, EXPLORER Correspondent
The concerns and controversies over the use of hydraulic fracturing has leaped from the United States to across the Atlantic Ocean, and a team of UK experts have offered a report that calls for shale fracturing to be restricted near aquifers.
Richard Davies, lead author of the recent study and the featured speaker at last year's AAPG International Conference and Exhibition in Milan, Italy, urged caution when using hydraulic fracturing in

new areas.

The issue of risks vs. benefits in petroleum exploration "has become a rather polarized debate," said Davies, a petroleum geologist and professor of energy, Durham Energy Institute, Durham University, UK.

Davies, no stranger to the tension often found at the intersection of science and public opinion, also was at the forefront of the scientific investigation of the 2006 Lusi mud volcano on the eastern tip of Java. and was a forum speaker on Lusi at the 2008 AAPG ICE in Cape Town, South Africa.

"We need more reasoned discussion," Davies said.

That was the aim of the study, which examined thousands of natural and artificially induced fractures to see how far they are likely to extend, and how much they pose to water supplies.

The researchers from Durham, Cardiff University in the UK and University of Tromsø in Norway compiled new and published data of fracturing, "of which there is a huge amount available, and much of which seems to be ignored.

"Our paper derives probabilities for hydraulic fracture heights based upon microseismic information from the USA – this should help regulators as it provides an evidence base for decision making," Davies said. "We also examine fracture heights for natural hydraulic fracture systems."

The results indicate hydraulic fracturing should not take place within 600 meters of aquifers used as water supplies, he said.

"When the water supplies are more than 600 meters above the depth of the level of hydraulic fracturing, the data published to date shows that the risk is extremely small," he said. "Based upon microseismic measurements, we've not seen fractures extend upwards that far yet.

"I think it's reasonable to say that we should be cautious when hydraulic fracturing in areas where this has not been done before," he continued. "What we know is mainly empirically based. We learn from experience."

The Tense Intersection

Critics fear harmful compounds in the process' fluids could make their way through the fractures and contaminate water supplies, but Davies said he knows of no proven cases of aquifer contamination from hydraulic fracturing.

Most fracturing occurs at depths that pose little risk, according to the study.

The paper, "Hydraulic Fractures: How Far Can They Go?" published in Marine and Petroleum Geology, determined that chances of fractures extending upward more than 600 meters is extremely small, and the probability of fractures of more than 350 meters was 1 percent.

While shallow fracturing is "not very common ... (a) report produced by the EPA on the Pavillion Field, Wyoming, shows that hydraulic fracturing has been carried out with a few hundred meters of aquifers," Davies said.

"There are simple and well-established techniques that could be introduced to reduce the risk and understand the uncertainties," he added. "There are also baseline surveys that could be carried out before drilling starts, and I've heard mention of such precautions by some companies."

Davies talk at the Milan ICE spoke of shale production, and warned that in the court of public opinion "the right technical solution can come second to public opinion ... Public opinion could kill shale gas."

He promoted the importance of injecting science into the public debate.

"A collective approach is required to reverse the growing concerns of the public," he said.

----- Forwarded by Dan Jackson/R8/USEPA/US on 07/12/2012 07:53 AM -----

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Date: 07/12/2012 07:50 AM

Subject: HF: a statistical view of fx length

AAPG has a lot of stuff in the July issue of "Explorer" on shale & hydro fracturing. Thought you might find the following column of interest:

http://www.aapg.org/explorer/2012/07jul/hydrofracturing_0712.cfm